

## ABSTRACT OF THE DISCLOSURE

An activated catalyst for the rapid decomposition of  $\text{H}_2\text{O}_2$  is provided wherein a porous high surface area catalyst base, e.g. a zeolite molecular sieve (ZMS) is impregnated or doped with a solution of metal cation salts and an ionic promoter, dried and calcined to form an activated catalyst. Such activated catalyst, in the form of a porous monolith or chunks, extrudate, pieces, pellets, or spheres, can be poured into and confined, in a tight pack, in a cavity of a rocket housing, downstream of a pressurized  $\text{H}_2\text{O}_2$  tank. The  $\text{H}_2\text{O}_2$  is flowed through the catalyst and undergoes rapid decomposition into steam and  $\text{O}_2$  and flows out the propellant nozzle of such rocket. Advantages of such activated catalyst are that it can be employed to rapidly decompose  $\text{H}_2\text{O}_2$  to propel a) a mono-propellant rocket, b) a bipropellant rocket (having fuel and a combustion chamber) and c) a hybrid rocket (powered by  $\text{H}_2\text{O}_2$  and fuel grain) and can also be used for a starter cartridge decomposition catalyst, a gas generator decomposition catalyst and the like. Another benefit of the activated catalyst of the invention is its low weight which is highly suitable in small flightweight rocket systems.